

# Unit Planning Guide: Unit 8 of 8

Unit Title: Probability	Pacing (Duration of Unit): 20 days
Grade: Geometry	Buffer Day(s): 5 days

## Desired Results

### Transfer Goals

Students will be able to independently use their learning to:

- **Make sense of problems and persevere in solving them.**
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- **Model with mathematics.**
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

### Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

#### Standards (Priority Standards in bold):

- S-CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
- S-CP.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
- S-CP.3 Understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ , and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
- S-CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
- S-CP.6 Find the conditional probability of A given B as the fraction of B’s outcomes that also belong to A, and interpret the answer in terms of the model.
- S-CP.5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*
- S-CP.7. Apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.
- S-CP.8. (+) Apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$ , and interpret the answer in terms of the model.
- S-CP.9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.
- S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
- S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

#### WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting  
Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.

**Meaning (\*Mostly assessed through Performance Tasks/Assessments)**

**Big Ideas:**

- The way that data is collected, organized and displayed influences interpretation.
- The probability of an event's occurrence can be predicted with varying degrees of confidence.

**Essential Questions:**

- Why is data collected and analyzed?
- How do people use data to influence others?
- How can predictions be made based on data?

**Acquisition (\*Mostly assessed through traditional summative assessments)**

**Knowledge:**

*Students will know ...*

- definitions of **union**, **intersection**, & **complement** of two events
- that two events are **independent** if information about one event does not give them information about another event.
- definitions of **conditional** and **marginal** probability.
- the difference between **quantitative** and **qualitative** data.

**Bolded words are key academic vocabulary**

**Skills:**

*Students will be skilled at:*

- constructing Venn diagrams of “and”, “or”, and “not” situations. (*Application*)
- finding the probability of independent events as  $P(A) \cdot P(B)$ . (*Comprehension*)
- finding the conditional probability as  $P(A) = P(A \text{ and } B) / P(B)$ . (*Application*)
- constructing and interpreting two way frequency tables. (*Application*)
- constructing and interpreting tree diagrams to model conditional probability events. (*Application*)
- applying probability to everyday situations. (*Synthesis*)
- applying the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpreting the answer in terms of the model. (*Synthesis*)

McDougal Littell  
Geometry 2007

Chapter 11: Probability  
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